

CSP Top view LEDs

CSP0804AN301-RGBC0105-3T



Features

- Direct attach-Flip Chip type
- Wide viewing angle.
- Suitable for vapor-phase reflow, Infrared reflow and wave solder processes
- Computable with automatic placement equipment.
- Available on tape and reel (8mm Tape).
- Pb-free.
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH.
- Compliance Halogen Free .(Br<900ppm,Cl<900ppm,Br+Cl<1500ppm)
- Precondition: Bases on JEDEC J-STD 020D Level 3

Descriptions

- The 0804 CSP LED is much smaller than general components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.

Applications

- Status indicator, keypad, keyboard, and industrial equipment.
- Light pipe application.
- General use.

Device Selection Guide

Type	Chip Materials	Emitted Color	Resin Color
R	AlGaInP	Brilliant Red	Water Clear
G	InGaN	Brilliant Green	Water Clear
B	InGaN	Brilliant Blue	Water Clear

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit	
Forward Current	I _F	R	20	mA
		G	20	
		B	20	
Peak Forward Current (Duty 1/10 @1KHz)	I _{FP}	R	40	mA
		G	40	
		B	40	
Power Dissipation	P _d	R	45	mW
		G	55	
		B	62	
Junction Temperature	T _j	115	°C	
Operating Temperature	T _{opr}	-40 ~ +85	°C	
Storage Temperature	T _{stg}	-40 ~ +90	°C	
ESD	ESD _{HBM}	R	2000	V
		G	2000	
		B	2000	
Soldering Temperature	T _{sol}	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.		

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol		Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	R	112	147.6	180	mcd	R:If=5mA G:If=5mA B:If=5mA
		G	355	495.1	710		
		B	71	93.3	112		
Viewing Angle	2θ _{1/2}		----	150	----	deg	R:If=5mA G:If=5mA B:If=5mA
Peak Wavelength	λ _p	R	----	631.0	----	nm	R:If=5mA G:If=5mA B:If=5mA
		G	----	520.4	----		
		B	----	462.9	----		
Dominant Wavelength	λ _d	R	618	622.2	628	nm	R:If=5mA G:If=5mA B:If=5mA
		G	522	526.8	532		
		B	462	467.1	472		
Spectrum Radiation Bandwidth	Δλ	R	----	13.96	----	nm	R:If=5mA G:If=5mA B:If=5mA
		G	----	25.73	----		
		B	----	17.60	----		
Forward Voltage	V _F	R	1.75	1.91	2.25	V	R:If=5mA G:If=5mA B:If=5mA
		G	2.25	2.56	2.75		
		B	2.60	2.76	3.10		

Note:

1. Tolerance of luminous intensity: ±11%
2. Tolerance of forward voltage: ±0.1V
3. Led components are not supposed to be reverse operated

Binning Information

Luminous Intensity Bins

Chip	Bin Code	Minimum Luminous Intensity (mcd)	Maximum Luminous Intensity (mcd)	Condition
R	R1	112	140	IF=5 mA
	R2	140	180	
G	T2	355	450	
	U1	450	560	
	U2	560	710	
B	Q1	71	90	
	Q2	90	112	

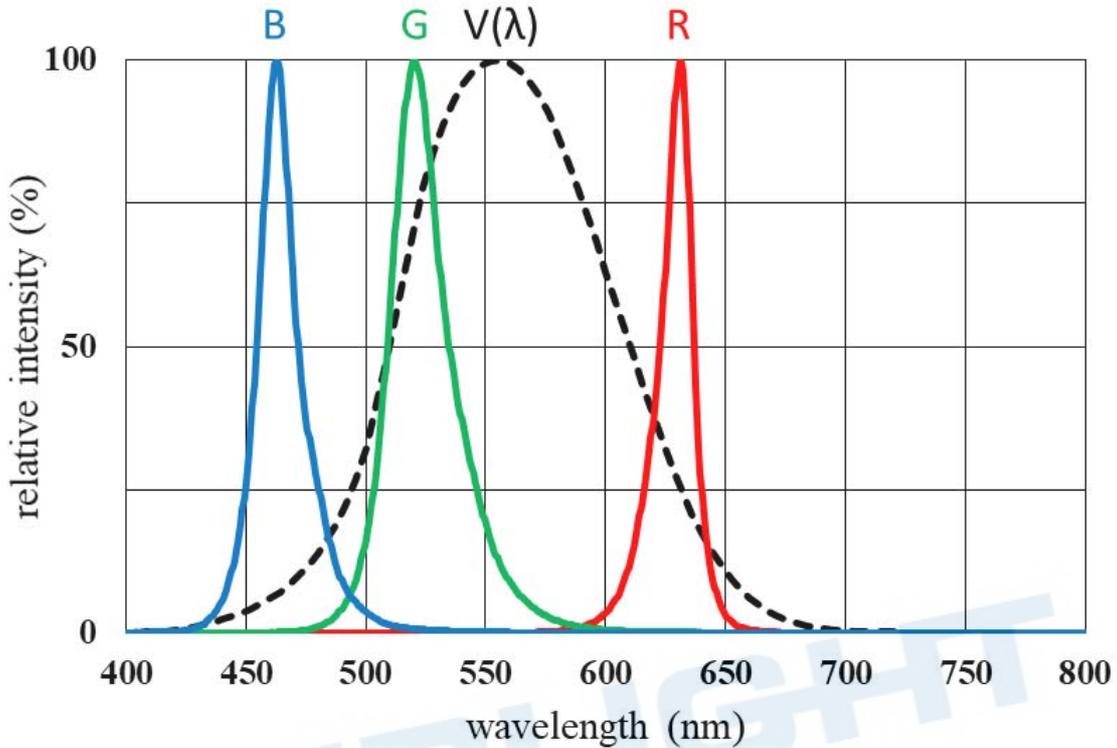
Notes: Luminous intensity measurement tolerance: $\pm 15\%$.

Bin Range of Dominant Wavelength

Chip	Bin Code	Minimum Dominant Wavelength (nm)	Maximum Dominant Wavelength (nm)	Condition
R	1823	618	623	IF=5 mA
	2328	623	628	
G	2227	522	527	
	2732	527	532	
B	6267	462	467	
	6772	467	472	

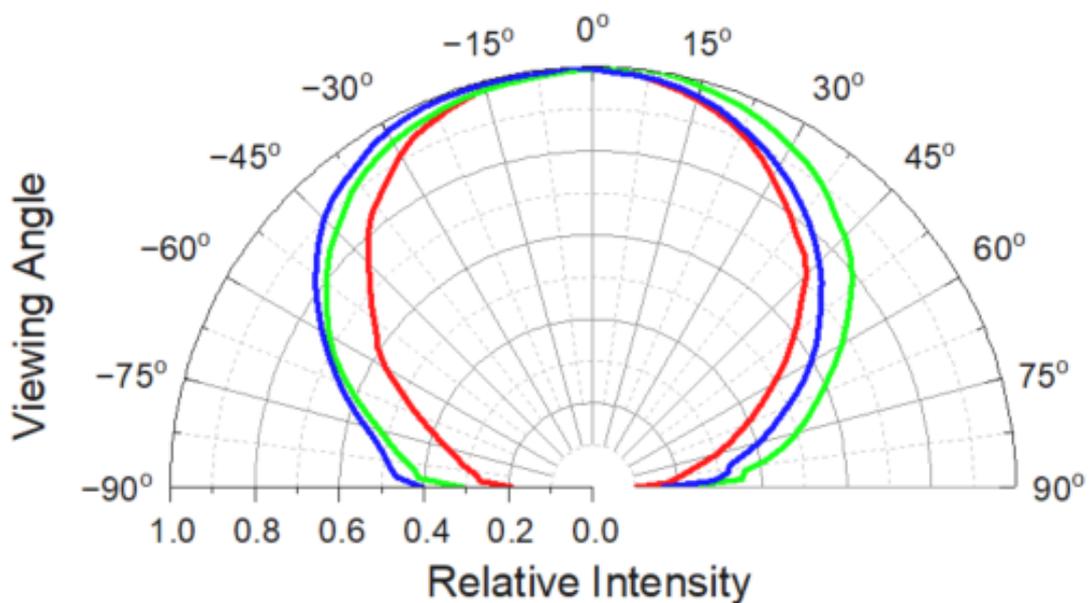
Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distribution

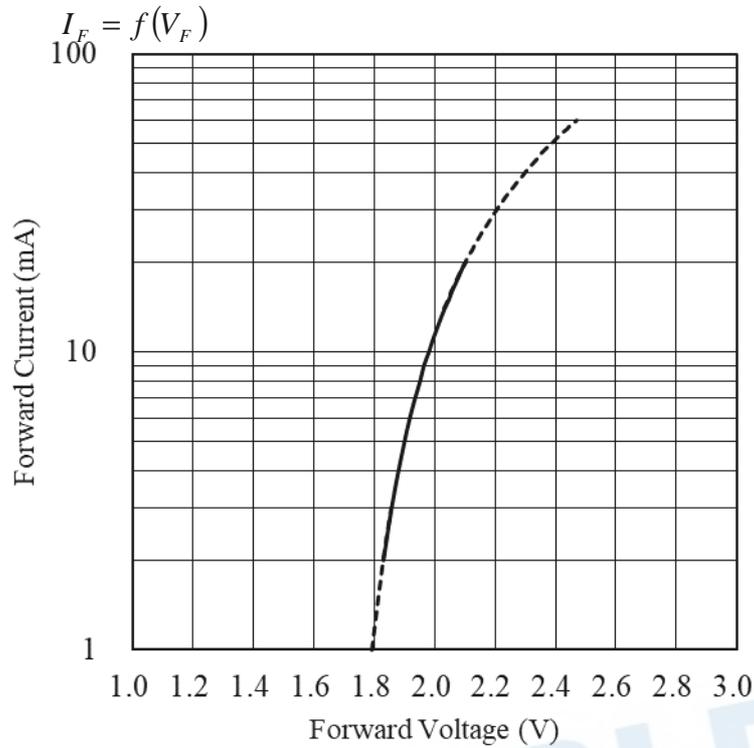


Note: $V(\lambda)$ =Standard eye response curve; I_f 5 mA

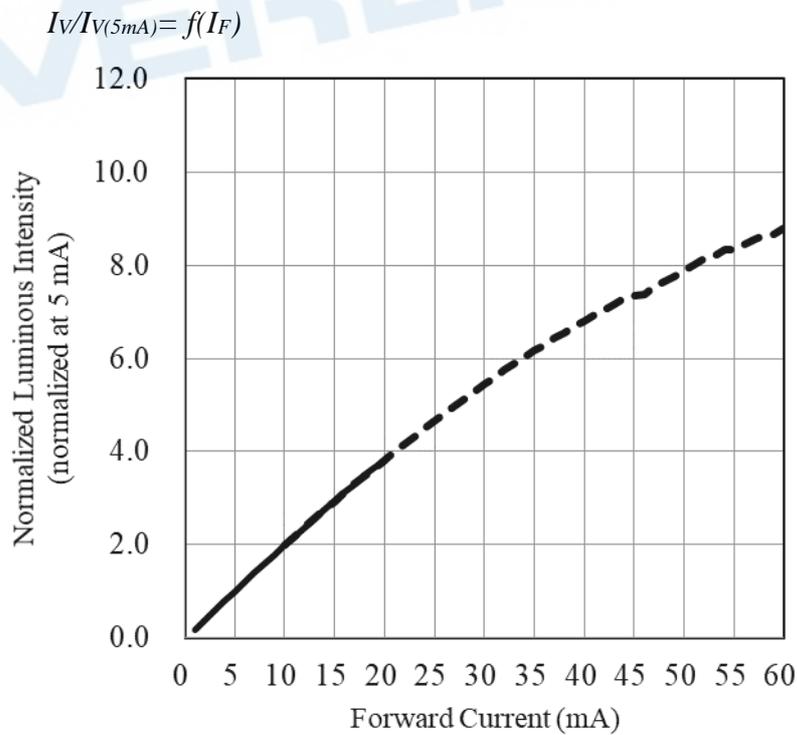
Diagram Characteristics of Radiation



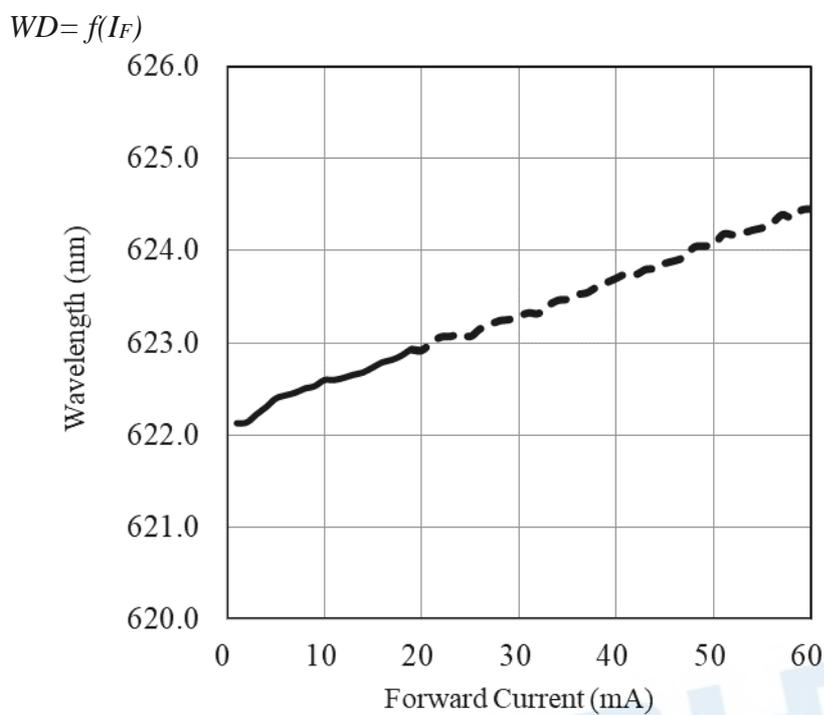
Forward Current vs. Forward Voltage(R)
 @ Ts = 25°C



Relative Luminous Intensity vs. Forward Current(R)
 @ Ts = 25°C

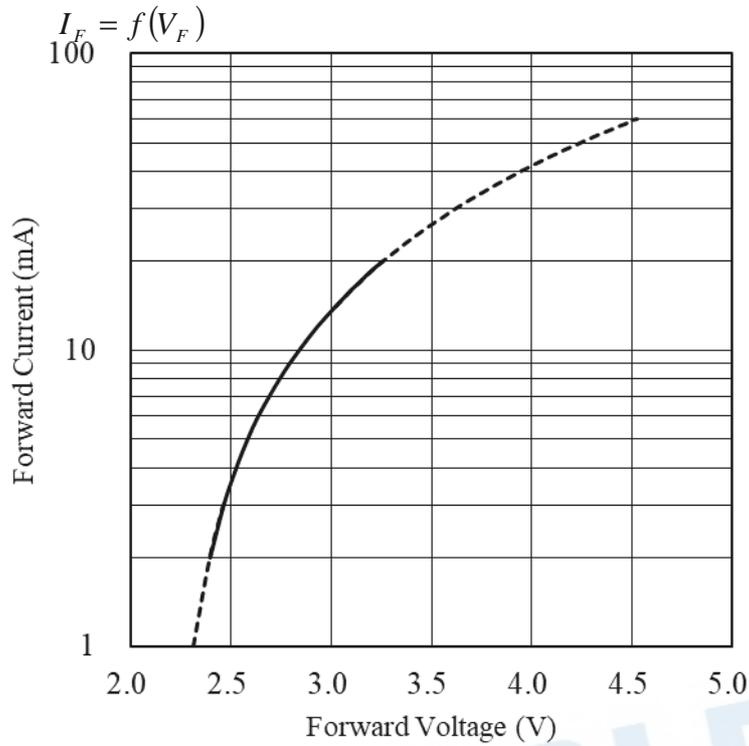


Dominant Wavelength vs. Forward Current(R)
@ $T_s = 25^\circ\text{C}$

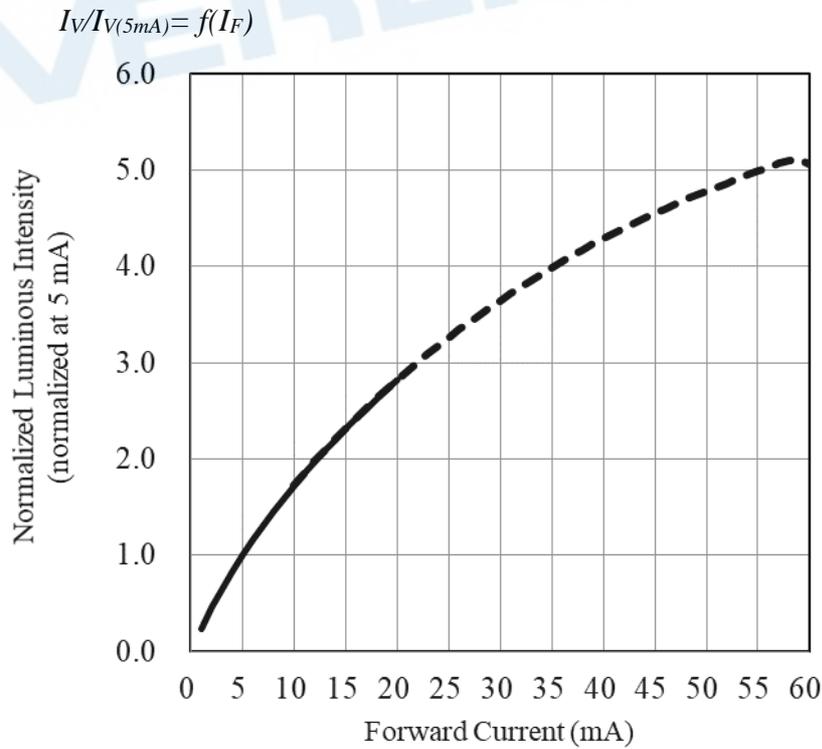


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Forward Current vs. Forward Voltage(G)
 @ Ts = 25°C



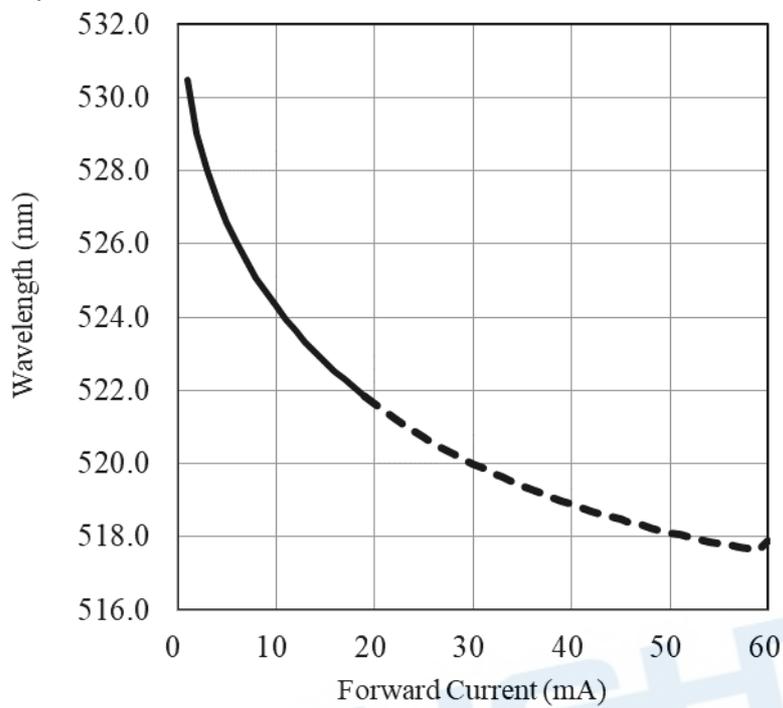
Relative Luminous Intensity vs. Forward Current(G)
 @ Ts = 25°C



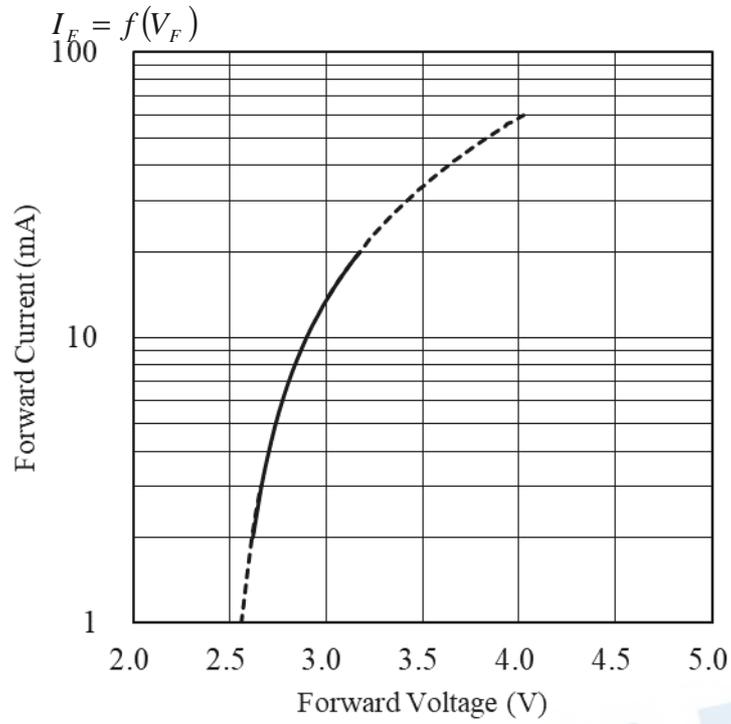
Dominant Wavelength vs. Forward Current(G)

@ Ts = 25°C

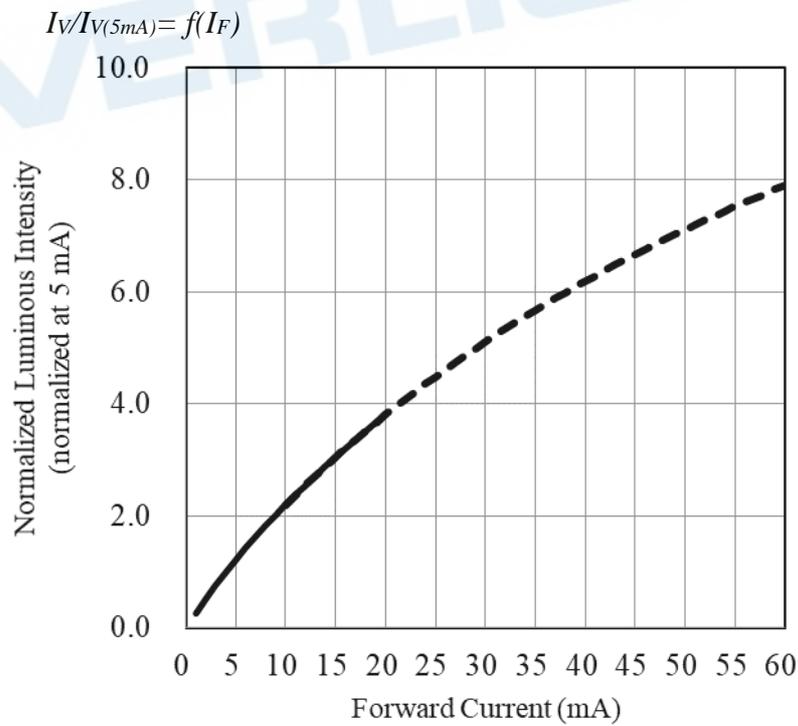
$$WD = f(I_F)$$



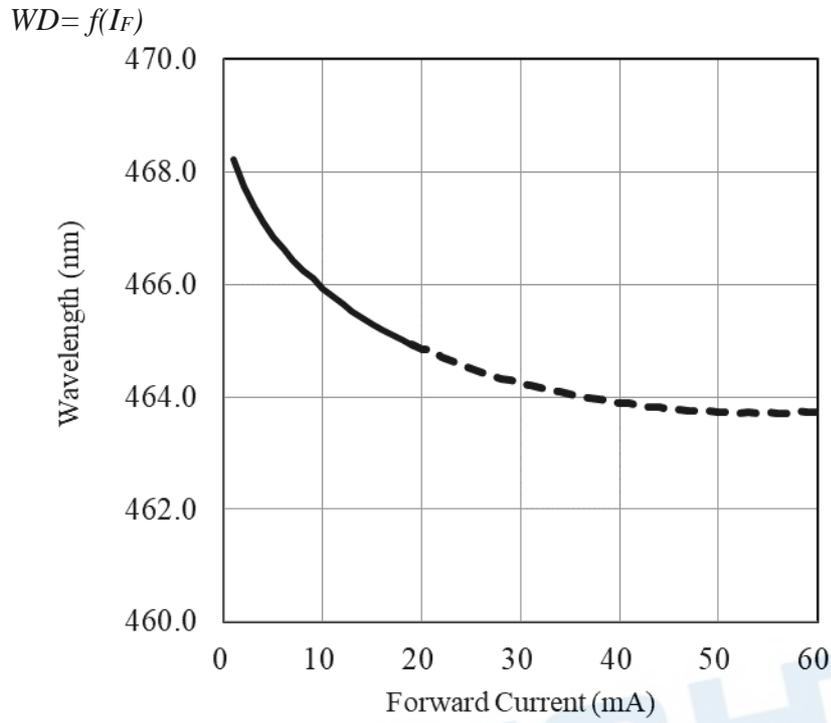
Forward Current vs. Forward Voltage(B) @ Ts = 25°C



Relative Luminous Intensity vs. Forward Current(B) @ Ts = 25°C

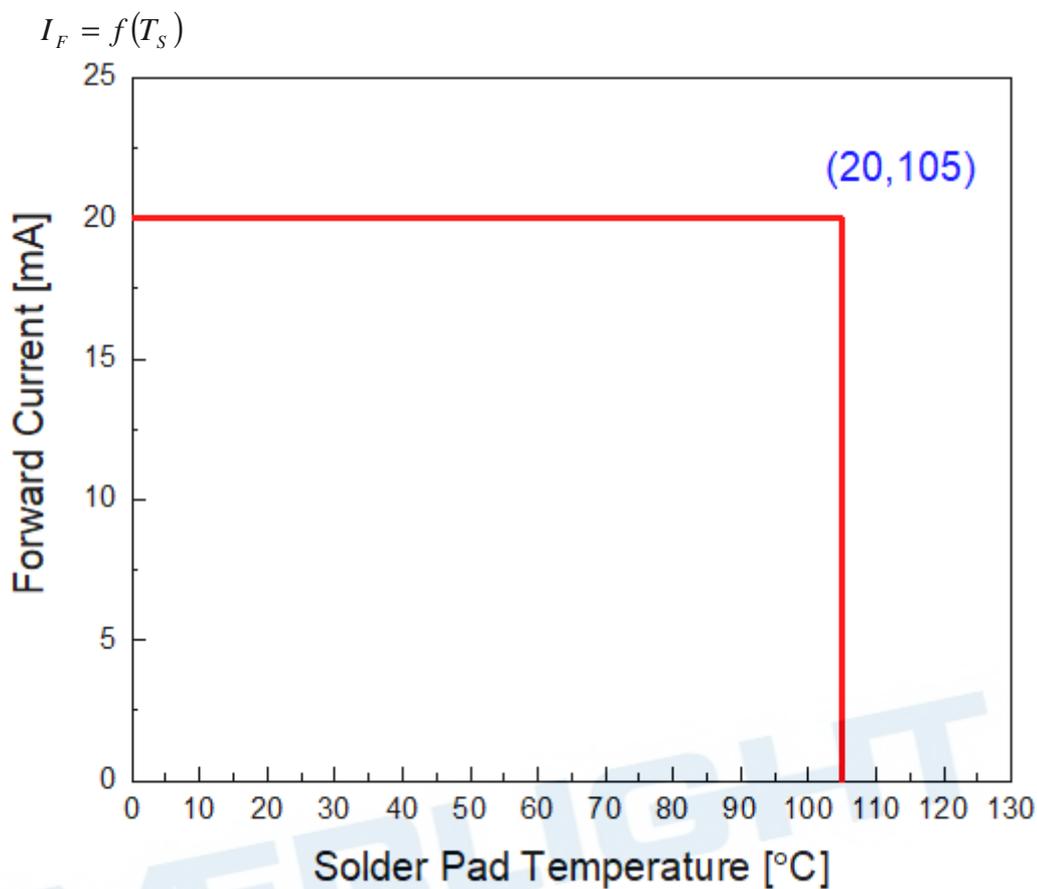


Dominant Wavelength vs. Forward Current(B)
@ $T_s = 25^\circ\text{C}$

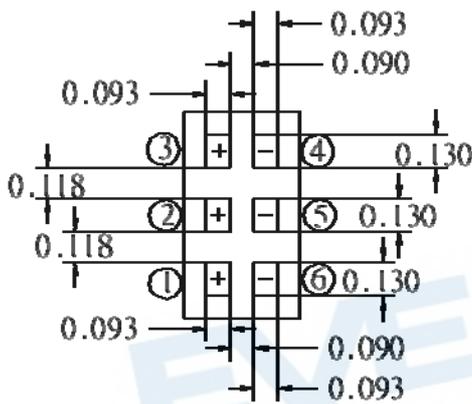
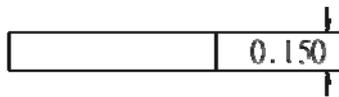
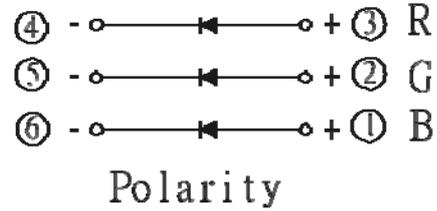
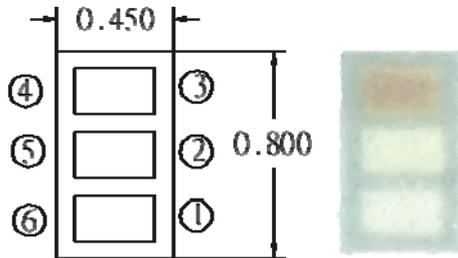


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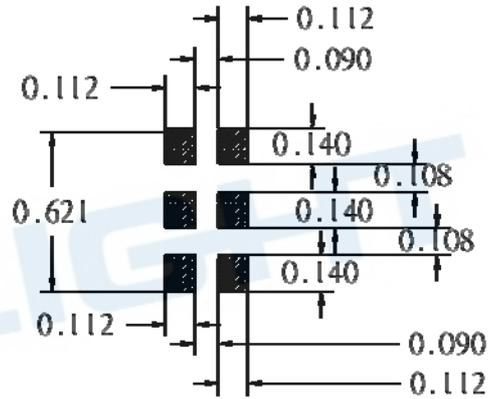
Forward Current Derating Curve



Package Dimension



Bot. view



Soldering patterns

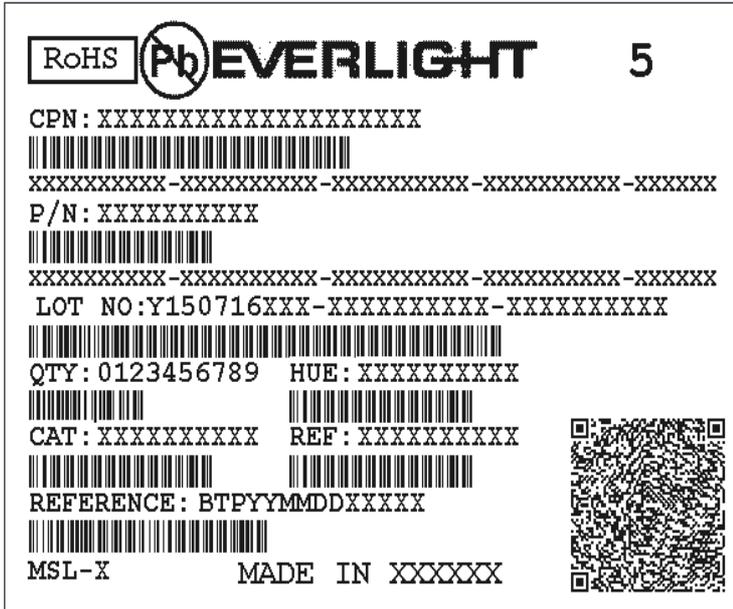
Suggested pad dimension is just reference only.

Please modify the pad dimension based on individual need.

Note: Tolerances unless mentioned ± 0.1 mm. Unit = mm

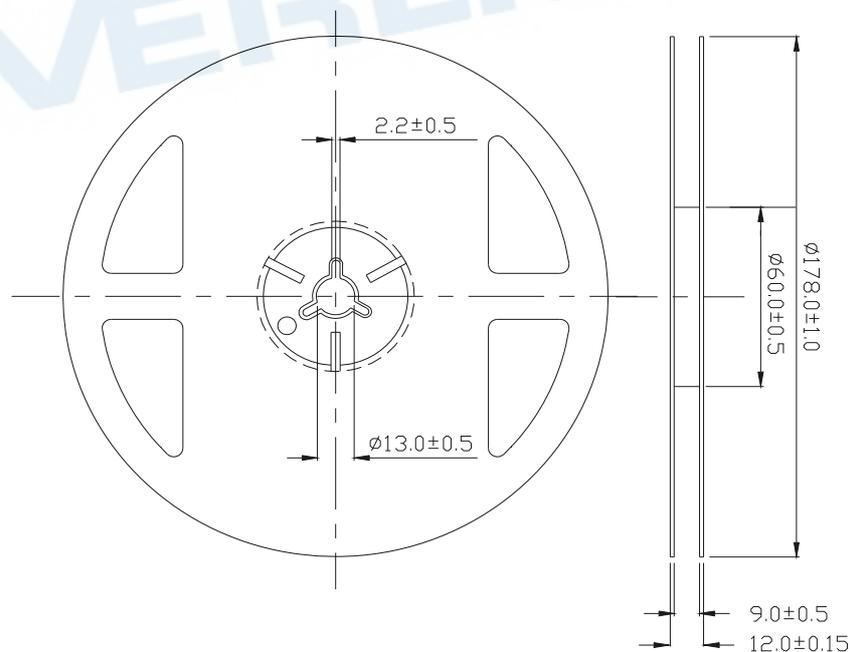
Moisture Resistant Packing Materials

Label Explanation



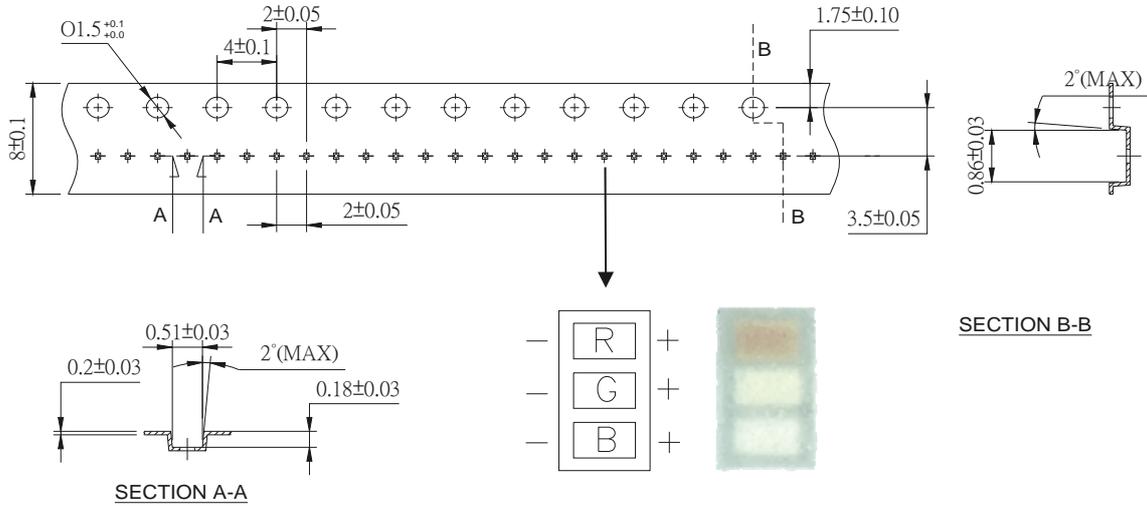
- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions



Note: The tolerances unless mentioned is $\pm 0.1\text{mm}$, Unit = mm

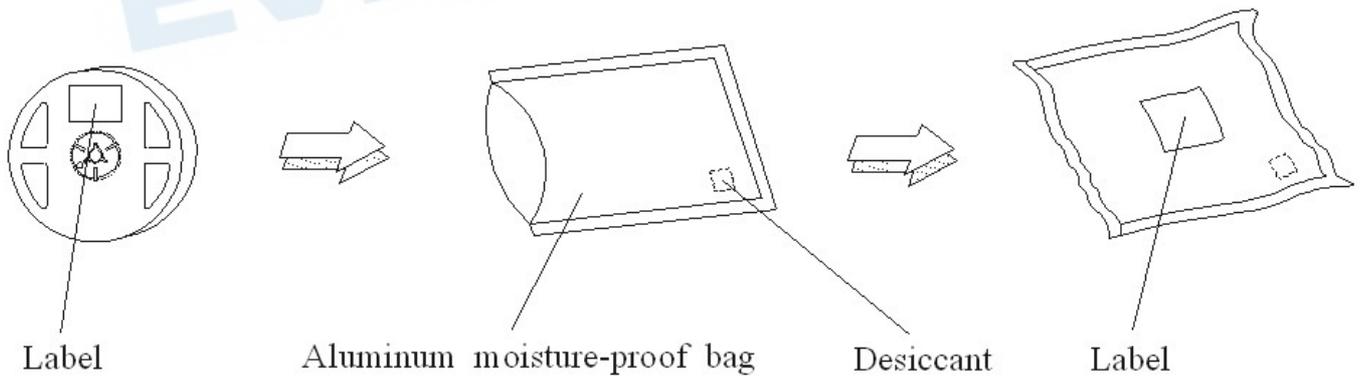
Carrier Tape Dimensions: Loaded Quantity 3000 pcs Per Reel



Notes:

1. Tolerances unless mentioned ± 0.1 mm. Unit = mm
2. Minimum packing amount is 250/500/1000/2000/3000 pcs per reel

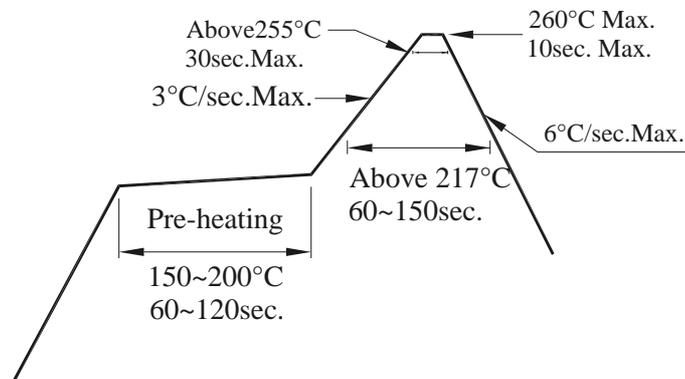
Moisture Resistant Packing Process



Precautions for Use

1. Over-current-proof

1.1 Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).



2. Storage

2.1 Moisture proof bag should only be opened immediately prior to usage.

2.2 Environment should be less than 30°C and 60% RH when moisture proof bag is opened.

2.3 After opening the package MSL Conditions stated on page 1 of this spec should not be exceeded.

2.4 If the moisture sensitivity card indicates higher than acceptable moisture, the component should be baked at min. 60deg +/-5deg for 24 hours.

3. Soldering Condition

3.1 Pb-free solder temperature profile

3.2 Reflow soldering should not be done more than two times.

3.3 When soldering, do not put stress on the LEDs during heating.

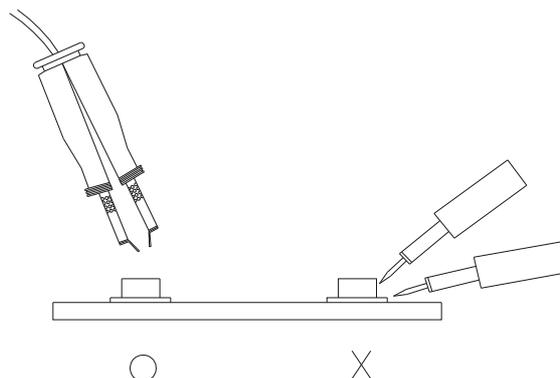
3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



Application Restrictions

High reliability applications such as military/aerospace, automotive safety/security systems, and medical equipment may require different product. If you have any concerns, please contact Everlight before using this product in your application. This specification guarantees the quality and performance of the product as an individual component. Do not use this product beyond the specification described in this document.

DISCLAIMER

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2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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